National Transportation Safety Board
Aviation Incident Final Report

Location:	Atlanta, GA	**Incident Number:**	ATL04IA156
Date & Time:	07/13/2004, 1200 EDT	**Registration:**	N951LF
Aircraft:	Airbus Industrie A320-233	**Aircraft Damage:**	Minor
Defining Event:		**Injuries:**	110 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The flight departed runway 27R, and immediately after takeoff, a passenger reported seeing a "cover" come off the No. 1 engine. The captain felt the airplane "shutter," declared an emergency, and returned the airplane to the airport and landed without further incident. Examination of the airplane revealed both sides of the No. 1 engine fan cowl were separated. The inboard fan cowl door was found approximately 7.5 nautical miles west southwest of the airport, and the outboard fan cowl door was found beside the runway. Examination of the latching mechanisms on each cowl door revealed no evidence of failure or mechanical malfunction. A mechanic stated he opened the fan cowl for the No. 1 engine prior to the flight, and he could not recall if the cowl doors were fully latched. A review of data provided by the Transportation Safety Board (TSB) of Canada revealed that, between 1991 and September 2000, there were ten similar cowl door separation events documented worldwide, and each involved the cowl doors having been opened prior to the flight. Examination of the incident airplane revealed it was equipped with the modifications outlined in Airworthiness Directive (AD) 2003-18-06 amendment 39-13297, which mandates the installation of a hold-open device for the cowl doors, as well as a modification of the latch handles to ensure that unfastened latch handles will hang down. A review of the operator's A320/321 preflight checklist revealed it included for each engine, "Check the fan cowl doors." During post-incident examination, a visual walk-around was performed with the undamaged No. 2 engine cowl in various unlatched configurations. Examination revealed unlatched cowl doors can appear closed flush when the hold-open device is overridden in preparation for latching, and unfastened latches that hang down may be obscured from view by the shape of the fan cowl. In response to this incident, Airbus Industrie issued an Operator's Information Telex to "A319/A320/A321 V2500 operators." The telex recommended that, in addition to mandatory compliance with AD 2003-18-06, operators consider the following: "... strictly adhere to AMM Task 71-13-00 for proper latching and closing of fan cowl doors after each maintenance action requiring cowl opening. ... It is essential that a flight crew member visually inspects the fan cowl doors prior to each flight to ensure that they are closed and latched."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The failure of company maintenance personnel to secure the nacelle/cowl doors, which resulted in a separation of the doors during takeoff initial climb.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. NACELLE/PYLON
2. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - COMPANY MAINTENANCE PERSONNEL
3. DOOR - NOT SECURED

Factual Information

On July 13, 2004, about 1200 eastern daylight time, an Airbus Industrie A320-233, N951LF, operated by Ryan International Airlines, Inc., as AirTran Airways Flight 4, returned for landing after the fan cowl doors of the No. 1 engine separated from the airplane in flight in the vicinity of Atlanta, Georgia. The scheduled domestic air carrier flight was operated under the provisions of Title 14 CFR Part 121 with an instrument flight plan filed. Visual meteorological conditions prevailed. The airline transport-rated captain, airline transport-rated first officer, four flight attendants, and 104 passengers were not injured, and the airplane sustained minor damage. The flight departed Hartsfield-Jackson Atlanta International Airport, Atlanta, Georgia, at 1140 on July 13, 2004.

The captain stated he performed a preflight inspection of the airplane and noticed no irregularities. The flight departed runway 27R en route to Orlando, Florida. According to the captain, immediately after takeoff, the lead flight attendant called to inform him that a passenger reported seeing a "cover" come off the left [No. 1] engine. The captain received no cockpit indications of a problem, and the captain instructed the lead flight attendant to look out the window and verify. The captain stated he then felt the airplane "shutter," and he contacted air traffic control and requested to return for landing. The lead flight attendant confirmed to the captain the No. 1 engine fan cowl was missing. The captain stated the No. 1 engine oil quantity indicator illuminated amber, and he declared an emergency. The captain stated the engine continued to operate normally, and the flight returned for landing without further incident.

Examination of the airplane revealed both sides of the No. 1 engine fan cowl were separated, the engine pylon cantilever was bent up, aft, and inboard; and the left wing slat outboard of the engine nacelle displayed an approximate 12-inch area with dent and puncture damage. The Union City Police Department retrieved the inboard fan cowl door from a dirt roadway approximately 7.5 nautical miles west southwest of Hartsfield-Jackson Atlanta International Airport. Airport authorities found the outboard fan cowl door in the grass beside runway 27R. Examination of the latching mechanism components on each cowl door revealed no evidence of failure or mechanical malfunction. Examination of the No. 2 engine fan cowls revealed they were closed and latched.

A mechanic who performed a daily check on the airplane prior to the accident flight stated he opened the fan cowl for the No. 1 engine to check on what appeared to be an oil leak. The mechanic stated he found no leak and was in the process of closing the fan cowl when he was called away to another aircraft. The mechanic later returned to the incident airplane to finish the maintenance checks, and he stated he could not recall if the cowl doors on the No. 1 engine were fully latched.

A review of data provided by the Transportation Safety Board (TSB) of Canada revealed that, between 1991 and September 2000, there were ten similar cowl door separation events involving Airbus single-aisle aircraft series documented worldwide. According to TSB report A00O0199, "All of the occurrences happened at rotation, and in every instance the engine cowls had been opened prior to the occurrence flight."

Federal Aviation Administration Airworthiness Directive (AD) 2003-18-06 amendment 39-13297, applicable to certain models of Airbus Industrie airplanes including the A320-233, mandates the installation of a hold-open device for the cowl doors, and it mandates a

modification of the latch handles to ensure that unfastened latch handles will hang down. Examination of the incident airplane revealed the handle modifications and hold-open devices were installed on the No. 1 and No. 2 engine cowls, the forward handle on each cowl was painted orange, and the three aft handles on each cowl were painted orange on the surfaces exposed when in the unlatched hanging configuration.

A review of the operator's A320/321 preflight checklist revealed it included for each engine, "Check the fan cowl doors." During examination of the incident airplane, a visual walk-around was performed with the undamaged No. 2 engine cowl in various unlatched configurations. The examination revealed unlatched cowl doors can appear closed flush upon visual walk-around inspection when the hold-open device is overridden in preparation for latching. Examination of the undamaged No. 2 engine fan cowl also revealed unfastened latches that hang down may be obscured from view by the shape of the fan cowl; the unfastened latches are visible when a specific inspection of the latches is conducted (i.e., the person conducting the inspection can view the latches by bending, crouching, or stepping back from the fan cowl).

In response to the incident, on August 5, 2004, Airbus Industrie issued an Operator's Information Telex, reference number SE 999.0088/04, to "A319/A320/A321 V2500 operators." The telex referenced the incident and stated, "the purpose of this telex is to remind all operators ... of Airbus recommendations and available modifications that have been developed to prevent fan cowl loss events." The telex recommended that, in addition to mandatory compliance with AD 2003-18-06, operators consider the following: "4.1 Maintenance Recommendations ... strictly adhere to AMM Task 71-13-00 for proper latching and closing of fan cowl doors after each maintenance action requiring cowl opening. 4.2 Operational Recommendations ... It is essential that a flight crew member visually inspects the fan cowl doors prior to each flight to ensure that they are closed and latched. 5. Improvements ... fluorescent paint on the forward cowl door latch handles (IAE SB V2500-NAC-71-0227) [and] caution decal on the outboard fan cowl doors (IAE SB V2500-NAC-71-0235)."

Pilot Information

Certificate:	Airline Transport; Commercial	**Age:**	36, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 With Waivers/Limitations	**Last FAA Medical Exam:**	02/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	06/01/2004
Flight Time:	5800 hours (Total, all aircraft), 730 hours (Total, this make and model), 2000 hours (Pilot In Command, all aircraft), 159 hours (Last 90 days, all aircraft), 56 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Commercial	**Age:**	30, Male
Airplane Rating(s):	Single-engine Land; Single-engine Sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without Waivers/Limitations	**Last FAA Medical Exam:**	04/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	11/01/2003
Flight Time:	4037 hours (Total, all aircraft), 367 hours (Total, this make and model), 2130 hours (Pilot In Command, all aircraft), 86 hours (Last 90 days, all aircraft), 53 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Airbus Industrie	**Registration:**	N951LF
Model/Series:	A320-233	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Transport	**Serial Number:**	460
Landing Gear Type:	Retractable - Tricycle	**Seats:**	166
Date/Type of Last Inspection:	05/01/2004, Continuous Airworthiness	**Certified Max Gross Wt.:**	169754 lbs
Time Since Last Inspection:	520 Hours	**Engines:**	2 Turbo Fan
Airframe Total Time:	32672.4 Hours at time of accident	**Engine Manufacturer:**	International Aero Engines
ELT:	Not installed	**Engine Model/Series:**	V2500-EA5
Registered Owner:	First Security Bank Utah NA Trustee	**Rated Power:**	31000 lbs
Operator:	Ryan International Airlines, Inc.	**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:	AirTran Airways	**Operator Designator Code:**	RYNA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	KATL, 1026 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	1153 EDT	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 3000 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	29°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Atlanta, GA (KATL)	**Type of Flight Plan Filed:**	IFR
Destination:	Orlando, FL (KMCO)	**Type of Clearance:**	IFR
Departure Time:	1140 EDT	**Type of Airspace:**	

Airport Information

Airport:	Hartsfield-Jackson Atlanta Int (KATL)	**Runway Surface Type:**	
Airport Elevation:	1026 ft	**Runway Surface Condition:**	
Runway Used:	NA	**IFR Approach:**	Unknown
Runway Length/Width:		**VFR Approach/Landing:**	Precautionary Landing

Wreckage and Impact Information

Crew Injuries:	6 None	**Aircraft Damage:**	Minor
Passenger Injuries:	104 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	110 None	**Latitude, Longitude:**	35.556111, -84.563056

Administrative Information

Investigator In Charge (IIC):	Catherine E Gagne	**Report Date:**	09/13/2005
Additional Participating Persons:	Jerry Brooks; Atlanta FSDO - 11; College Park, GA Terry Cox; Ryan International Airlines; Wichita, KS		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		